



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,786	03/04/2005	Hisayoshi Yamoto	920252.00002	7891
26710	7590	11/21/2007		
QUARLES & BRADY LLP			EXAMINER	
411 E. WISCONSIN AVENUE			BUEKER, RICHARD R	
SUITE 2040				
MILWAUKEE, WI 53202-4497			ART UNIT	PAPER NUMBER
			1792	
			MAIL DATE	DELIVERY MODE
			11/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/526,786	YAMOTO, HISAYOSHI
	Examiner Richard Bueker	Art Unit 1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 September 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 21-35 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 21-35 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ .	6) <input type="checkbox"/> Other: _____ .

In claim 21, line 20, the phrase "mixed one another" is non-idiomatic, and it should be changed to "mixed with one another".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-23 and 32-34 are rejected under 35 U.S.C. 102(a) or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toda (JP 2000-216150) or Toda (U.S. 6,540,840). Toda (JP 2000-216150) and Toda (U.S. 6,540,840) are patent family equivalents and Toda (U.S. 6,540,840) will be used in this office action an English translation of Toda (JP 2000-216150), and the two references will be both be referred to together in the alternative as Toda. Toda (see Figs. 1, 2A, 2B and 8 for example) discloses a vaporizer for CVD comprising a plurality of pipes (5a, 5b) for a plurality of raw-material solutions, and a pipe (2) for a carrier gas.

Regarding the claim 21 limitation of " a pipe for a carrier gas, said pipe being provided around an outside of said plurality of pipes", it is noted that the dictionary

definition (see attached copy) of "around" includes "near". Also, the dictionary definition (see attached copy) of "outside" includes "a place or region beyond an enclosure or boundary" and "an outer side or surface". In Toda's apparatus, The pipe 2 is near the plurality of pipes 5a and 5b. Alternatively, the pipe 2 surrounds a place or region beyond the enclosure or boundary of the pipes 5a and 5b. Alternatively, pipe 2 surrounds the outer surface of the leading ends of the pipes 5a and 5b. Therefore, for each of these reasons, it is correct and proper to conclude that Toda's pipe (2) for a carrier gas is provided "around an outside of said plurality of pipes" 5a and 5b.

Also, the leading end of Toda's pipe 2 includes an orifice 7 that is spaced away from the leading ends of pipes 5a and 5b, and a dispersing portion is located between the leading ends of said plurality of pipes 5a and 5b, wherein said dispersing portion is for mixing the plurality of raw material solutions with carrier gas. Also, a vaporizing tube 20 is connected to said leading end of said pipe 2 for the carrier gas via said orifice 7.

Also, Toda (see col. 6, lines 3-16, for example) teaches the step of providing a cleansing line for using a solvent to clean the portion of the apparatus from the liquid raw material solution supply line up to and including the vaporizing member. The cleansing line and solvent inherently constitutes "a cleaning mechanism cleaning at least one of said dispersing portion said orifice and said vaporizing member".

Also, Toda's apparatus includes a heating means 21.

Lastly, Toda's apparatus is designed to mix a plurality of raw material solutions and a carrier gas at said dispersing portion and then eject the resultant mixture into the vaporizing tube 20. The speed at which the mixture is ejected is a process limitation,

and Toda's apparatus is inherently capable of injecting the mixture at a "fast" speed.

Further regarding the recited limitation of "ejected to said vaporizing tube at a fast speed", it is noted that "fast" is a relative term, and Toda's apparatus is inherently capable of ejecting the mixture at more than one speed, with one speed being a "fast" speed relative to another "slow" speed.

Claims 21-23 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda (JP 2000-216150) or Toda (U.S. 6,540,840), and taken in further view of Sun (2002/0192375). Toda doesn't specifically describe how his cleansing line is connected to his vaporizer apparatus. Therefore, Sun (see Fig. 7) has been cited to provide a specific example of how a solvent cleansing line can be connected to constitute a cleansing line for using a solvent to clean the portion of the apparatus from the liquid raw material solution supply line up to and including the vaporizing member. If, for argument's sake, Toda alone were not considered to include the claimed cleaning mechanism, it would have been obvious to one skilled in the art to provide the apparatus of Toda with a cleaning line in the manner illustrated in Fig. 7 of Sun for the desirable purpose of accomplishing the cleaning step desired by Toda.

Claims 25-27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda (JP 2000-216150) or Toda (U.S. 6,540,840), alone or in view of Sun (2002/0192375) for the reasons discussed above, and taken in further view of Schmitt (6,098,964). Schmitt (see Fig. 1 and the abstract, for example) teaches that a vaporizer for CVD can be monitored for clogging by monitoring the pressure of a carrier gas being supplied to the vaporizer. It would have been obvious to one skilled in the art

to provide the carrier gas line of Toda's vaporizer with a pressure gauge to monitor the carrier gas pressure, because Schmitt teaches that this is a good way to monitor a CVD vaporizer for detecting clogging.

Claims 24 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda (JP 2000-216150) or Toda (U.S. 6,540,840), alone or in view of Sun (2002/0192375) for the reasons discussed above, and taken in further view of Agarwal (6,258,171). Agarwal (see the Fig. and the abstract) teaches that it is desirable to provide a plurality of vaporizers for CVD so that one of the plurality of vaporizers can be taken out of service for cleaning, while another one of the plurality of vaporizers is used to supply vapor to a CVD reaction chamber. The vaporizers can be swapped so that vapor is continuously supplied to the CVD reaction chamber. It would have been obvious to one skilled in the art to modify the apparatus of Toda by providing it with plural vaporizers in the manner taught by Agarwal, so that one vaporizer can be taken out of service for cleaning, while another vaporizer is used to supply vapor to a CVD reaction chamber, and in that way the apparatus of Toda can gain the desirable advantage of continuous cleaning as taught by Agarwal.

Claims 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda (JP 2000-216150) or Toda (U.S. 6,540,840), alone or in view of Sun (2002/0192375) and taken in further view of Schmitt (6,098,964) for the reasons discussed in the rejection of claims 17-20, 25, 26, 27, 29 and 30 above, and taken in further view of Agarwal (6,258,171). Agarwal (see the Fig. and the abstract) teaches that it is desirable to provide a plurality of vaporizers for CVD so that one of the plurality

of vaporizers can be taken out of service for cleaning, while another one of the plurality of vaporizers is used to supply vapor to a CVD reaction chamber. The vaporizers can be swapped so that vapor is continuously supplied to the CVD reaction chamber. It would have been obvious to one skilled in the art to modify the apparatus of Toda by providing it with plural vaporizers in the manner taught by Agarwal, so that one vaporizer can be taken out of service for cleaning, while another vaporizer is used to supply vapor to a CVD reaction chamber, and in that way the apparatus of Toda can gain the desirable advantage of continuous cleaning as taught by Agarwal.

Applicant has argued that "Toda does not disclose or suggest a characteristic of the invention set forth in claim 21 that "the carrier gas pipe is disposed outwardly of the raw-material solution pipes as to cover the raw-material solution pipes". First, it is noted that this quoted language is not found in any of the pending claims. None of the claims recite that the carrier gas pipe covers the raw material solution pipes. the word "cover" is not in the claims.

Furthermore, regarding the actual claim 21 limitation of " a pipe for a carrier gas, said pipe being provided around an outside of said plurality of pipes", it is noted that the dictionary definition (see attached copy) of "around" includes "near". Also, the dictionary definition (see attached copy) of "outside" includes "a place or region beyond an enclosure or boundary" and "an outer side or surface". In Toda's apparatus, The pipe 2 is near the plurality of pipes 5a and 5b. Alternatively, the pipe 2 surrounds a place or region beyond the enclosure or boundary of the pipes 5a and 5b. Alternatively, pipe 2 surrounds the outer surface of the leading ends of the pipes 5a and 5b.

Therefore, for each of these reasons, it is correct and proper to conclude that Toda's pipe (2) for a carrier gas is provided "around an outside of said plurality of pipes" 5a and 5b.

Applicant's arguments appear to imply that Toda's pipe 2 is not a pipe because it is an annular flow path. It is noted, however, that the dictionary definition of "pipe" (see attached copy) is "a long tube or hollow body for conducting a liquid, gas or finely divided solid or for structural purposes". The pipe 2 of Toda is a hollow body for conducting a gas, and it is therefore a pipe.

Applicant has argued that "Toda has a problem such that it cannot atomize a raw material solution". It is noted, however, that the present claims do not require that raw material solution is atomized. The claims recite a "dispersing portion" that is capable of mixing a raw material solution with a carrier gas. Toda's apparatus includes a dispersing portion in which a raw material solution is mixed with a carrier gas. Therefore, Toda anticipates these limitations as they are presently recited in claim 21.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Richard Bueker*  
Richard Bueker  
Primary Examiner  
Art Unit 1763